Richard Haburcak
Dept. of Mathematics, Dartmouth College
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Education

Dartmouth College, Hanover, NH 2018-present
Ph.D. student, 3rd year
Advisor: Asher Auel

Brandeis University, Waltham, MA 2014-2018
B.A. Mathematics, B.A. Chemistry *Summa cum laude*
M.A. Chemistry Advisor: Bing Xu, Thesis: *Ligand-Receptor Interactions Module Self-Assembly of Small Molecules*

Awards and Honors

- Goldwater Scholarship Honorable Mention 2017
- Brandeis University Science Hall of Fame
- Brandeis University Shapiro Prize in Mathematics

Teaching and Mentorship

- Courses Taught:
  - Dartmouth College:
    - Math 1, Introduction to Calculus, Fall 2020
    - Directed Reading Program, Algebraic Geometry, Winter 2021
- Teaching Assistant:
  - Dartmouth College:
    - Math 13, Advanced Multivariable Calculus, Fall 2018
    - Math 23, Differential Equations, Spring 2019
    - Math 8, Calculus I, Fall 2019
    - Math 101, Graduate Algebra, Winter 2020
  - Brandeis University:
    - Chem142, Quantum Chemistry, 2015-2017 (3 times)
    - Chem141, Thermodynamics, 2017-2018 (2 times)

Talks

- Dartmouth Graduate Student Seminar:
  - Adding and Putting Rings on It (Abelian Categories), April 2019
  - Semisimplicity of Finite Group Rings, September 2019
  - Maximal Spectra and Why Continuous Functions are Important, Jan 2020

Publications

- **Haburcak, R.**; Shi, J.; Du, X.; Yuan, D.; Xu, B. "Ligand-Receptor Interaction Modulates the Energy Landscape of Enzyme-Instructed Self-Assembly of Small Molecules" J. Am. Chem. Soc. 2016. DOI: 10.1021/jacs.6b07677

- Zhou, R.; Kuang, Y.; Zhou, J.; Du, X.; Li, J.; Shi, J.; **Haburcak, R**.; Xu, B. "Nanonets Collect Cancer Secretome from Pericellular Space" PLOS ONE 2016, 11, e0154126.
- Shi, J. F.; Yuan, D.; **Haburcak, R**.; Zhang, Q.; Zhao, C.; Zhang, X. X.; Xu, B. "Enzymatic Dissolution of Biocomposite Solids Consisting of Phosphopeptides to Form Supramolecular Hydrogels" *Chem. Eur. J*. **2015**, *21*, 18047-18051.
- Shi, J. F.; Du, X. W.; Yuan, D.; **Haburcak, R**.; Zhou, N.; Xu, B. "Supramolecular Detoxification of Neurotoxic Nanofibrils of Small Molecules via Morphological Switch" *Bioconjugate Chem*. **2015**, 26, 1879-1883.
- Shi, J. F.; Du, X. W.; Yuan, D.; **Haburcak, R**.; Wu, D. D.; Zhou, N.; Xu, B. "Enzyme transformation to modulate the ligand-receptor interactions between small molecules" *Chem. Commun*. **2015**, *51*, 4899-4901.
- Shi, J. F.; Du, X. W.; Huang, Y. B.; Zhou, J.; Yuan, D.; Wu, D. D.; Zhang, Y.; **Haburcak, R.**; Epstein, I. R.; Xu, B. "Ligand-Receptor Interaction Catalyzes the Aggregation of Small Molecules to Induce Cell Necroptosis" *J. Am. Chem. Soc*., **2015**, *137*, 26–29.